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The Therapeutic Value of Massage In Acute Diseases.

READ IN THE SECTION ON PHARMACOLOGY OF THE AMERICAN MEDICAL ASSOCIATION, AT THE FIFTY-FIFTH ANNUAL SESSION, JUNE, 1904.

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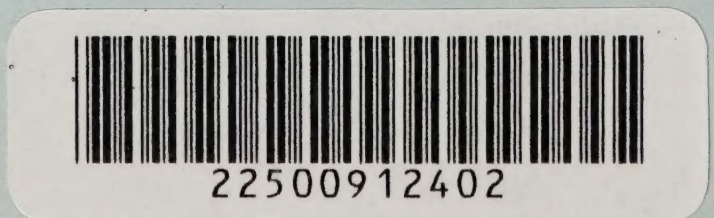

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THE THERAPEUTIC VALUE OF MASSAGE IN ACUTE DISEASES.

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NEW HAVEN, CONN.

The question of nutrition underlies the activity of every organ and tissue of the body. In general, we may say that nutrition is dependent on circulation, and that this is a double process, or rather a single nutrient current that becomes divided into two in the capillary regions. At the point of division it is not only distributed by two entirely distinct sets of tubes, but the rate of flow is widely different, as is the quality of the contained nutrient stream. The blood is ordinarily looked on as the great nutrient tissue of the body. It has its well-defined cells which carry on individual functions of widely different character, according to the nature of the corpuscle, but the intervening plasma, or stroma substance, lying between these cells, is the carrier of most of the nutrition that the various structures of the body need, as it is also the remover of their waste products.

The speed of the blood flow is such that material gathered from it must be withdrawn by chemical activity rather than by the physical processes of diffusion and osmosis; but as the removal of waste requires rapidity of flow, it becomes desirable that the purveyor function should be to some extent separate from the eliminative function. For this purpose the blood vessels, at the areas where the blood flow is slowest, are so constructed that they permit the blood plasma to flow through into the intercellular spaces of the various organs, and these intercellular spaces are more or less filled with this leakage material that thus bathes the cells with a nutrient fluid which moves comparatively slowly and which permits free interchange with the

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protoplasm of the cell. In this way nutrition is maintained.

Near the periphery of the organ or any of its segments, the intercellular spaces take the form of well-defined ducts, and these are called lymph vessels, being supplied with valves at frequent intervals that permit the movement of their contained fluid in only one direction, which is toward the periphery of the organ. When we pass beyond the limits of any individual structure, we find that the lymph ducts in general are continued toward the center of the body, while along the course of the lymph vessels, or lymphatics as they are called, are found frequent glands into which the vessels pour their contents and from which fewer lymphatics lead on to the center of the body. In some regions, as in the neck, these glands are extremely frequent, so that the lymph is strained before it has passed any great distance from its point of origin. In other regions, like the arm and leg, considerable distance may be traversed before the lymph is poured into a gland, and it is interesting and important to note here that in general these lymph glands are located in the region of joints, and usually on the flexor sides of the joints, so that any movement of the limbs, neck, etc., tends to temporarily compress the glands and also to press on the lymphatics so as to drive the lymph along toward the center of the body. This may be called a natural massage of the lymphatic area, and its importance will be noticed when we compare the edematous condition of a limb that is kept perfectly free from movement with the fine circulation of a limb that is adequately exercised through the whole range of its possible motion.

This brings us to speak of the causes of the lymph flow, which are, in brief, the residual or leakage pressure which is carried through from the blood, and, more important under ordinary conditions of life, mechanical pressure. Under this latter head we must classify not only the pressure created by change in form of a part by muscular contraction, but muscular pressures produced in various regions by different physical acts, as in walking, sitting, carrying burdens, etc., and also the minus pressure produced in the thorax during inspiration.

In conditions of extreme inactivity, as when we are

sleeping, the lymph flow is extremely slow, because every element of propulsion is reduced in quality, the aspirations of the thorax being more constant than any of the other forces. During violent physical exercise the lymphatic flow is greatly accelerated, because every element of propulsion is pushed toward its maximum, both the heart and respiratory organs responding in direct proportion to the amount of muscular work done.

The difference in lymphatic pressure and speed of flow has been beautifully illustrated by a case that has come under my notice that is worth recording.

Patient.—A young man, aged 20, came to me with a peculiar discharge from the upper part of the thigh over an area of about 7 cm. in diameter, lying immediately below Poupart's ligament on the left side.

History.—At about 8 years of age, he had suffered from a bubonocele, the cause of which was not absolutely certain, although he thinks it was due to a blow in that region. The inflammation at this time must have been excessive, and while medical care was given the patient surgical interference was not used until the cyst burst and evacuation took place by natural methods. The disintegration of tissue must have been extensive, as indicated by the size of the cicatricial relic of the inflammation. The abscess had not invaded the abdominal integument, and the line of Poupart's ligament removed a segment of what would otherwise have been a fairly circular scar.

Examination.—This young man was apparently in perfect general physical health, and had been playing football the afternoon before I saw him in the evening. He had a towel around his thigh, which was wet, and I found it was saturated with lymph that was exuding from the cicatricial area in perhaps a dozen places, and there were about as many more spots that looked like small blisters, from the size of the head of an ordinary pin up to a bulla 3 mm. in diameter. He told me that all these openings that were oozing first appeared as blisters, and that if I were to open one of those blisters it would leak a fluid such as the others were discharging. I found this to be the case, and that the discharge of one of these openings would amount to a drop in about from thirty to forty seconds, some of them oozing more rapidly than others. Any one could be easily isolated by lightly pressing a tube over it, and the discharge be thus collected. On microscopic and chemical examination, this fluid was found to be pure lymph, and the case afforded an unusual opportunity to observe the influence of active and passive exercise on lymph flow. This case had repeatedly gone through this leakage process, and the patient

was in no way alarmed at his condition. He knew that if he remained quiet for a period of two or three days the scar would heal over and would remain intact until he indulged in fairly vigorous exercise again. He was of active temperament, and for a period of three years I had an opportunity to observe him under normal conditions, with the lymphatic flow just beginning, as well as at its height, and while subsiding.

A study of this case under the influence of various positions and forms of activity showed that a high elevation of the leg soon caused a marked diminution in the amount of flow, and this was the quickest method of relief that would permit the healing over of the opening of the cicatricial tissue. It was also demonstrated that a massage of the muscles of the leg produced an increased flow of lymph that was continued for some little time, and that appeared to be due to two causes: First, an immediate exit of lymph due to pressure on the lymphatic vessels and lymph spaces; and, second, a prolonged secondary flow apparently due to hyperemia of the structures that were massaged. The importance of this case in demonstrating the value of appropriate massage in stimulating the flow of lymph and blood is greater than the indirect evidence produced in the diminution in the size of parts and the reduction of edematous conditions, for the time relations existing between the movements and the flow could be readily recorded.

ACTION OF MASSAGE ON THE NERVOUS SYSTEM.

A second value of massage that I wish to mention is with reference to its action on the nervous system. Here we have a complex matter that is not completely understood, but that has certain salient points so definite in character that we may properly discuss them as scientific truths.

The first feature of nerve activity that is started by massage is a sensory impression that accomplishes several things. First, the attention of the patient is diverted from the seat of pain or of discomfort, with such psychic results as directly relieve the discomfort to a greater or less degree, according to the mental poise of the patient and the ability of the masseur to establish satisfactory sensory impressions. This relief of mental attention is highly favorable to reparative action. It was demonstrated several years ago that the centering of the attention on any given part of the

body, like the hand, was capable of elevating its temperature to a very considerable extent, and it has been repeatedly demonstrated that the unfavorable mental anxiety regarding the pain of a part results in increased hyperemia of the part, with corresponding increase in pain from the stretching of sensory nerve fibers throughout the area involved. The converse of this proposition must be true, that if the blood be diverted to remote parts through nervous intervention the congested area will be appreciably relieved.

Second. The vasomotor nerves react to surface impressions, as well as to muscular movements, and the blood may be diverted to remote areas by such movements as will cause a reflex dilatation of the blood vessels in these parts. It should be noted in this connection that a vasodilator action over considerable areas will tend to diminish the total blood pressure, and for this reason massage has been used with such great success in cases of valvular lesions of the heart.

Third. The deep reflexes that control normal balance between parts are kept in action so that an approximation to general health is maintained while the body is undergoing local disease—for in a sense nearly all acute diseases are local—and the healthful functioning of one part assists in the normal activity of all.

When we consider how greatly the blood supply to any given part is dependent on nerve control of the vessels leading to that part, we shall appreciate at once how an appropriate appeal to nerve centers may so far modify circulation as to give relief from pain and promote healthful repair. By appropriate massage the blood supply may be distributed fairly evenly throughout the body, and all organs remain in a fair condition for functional activity, even when acute disease is strongly tending to dam it up in some definite locality.

MASSAGE IN PROLONGED ACUTE DISEASES.

Another important result of massage in prolonged acute disease is the improved nutrition that the system has through the crowding into the nutrient circuit of the material that is naturally provided by the retrograde metamorphosis of cells throughout the body. We are taught in our elementary physiology that in periods of starvation a sheep becomes an example of carnivorous feeding because its own cells give up the

material that afford nourishment to such parts as must maintain a fairly regular degree of activity, such as the heart, respiratory muscles, etc.

When the muscles are called into action by volitional movements they consume in a catabolic way the material that might be given off by diffusion and osmosis to the lymph and blood vessels, and so be carried around to nourish the tissues whose activity must be fairly regular and constant. In this way life may be prolonged when the natural nutrient canal is unable to retain or absorb and appropriate the proper nutriment for the body. This phase of massage is more important than has usually been conceded, for it gives a possibility of rest to organs that are unable to functionate and carries the system along until the natural methods are restored. This process renders available much of the fatty tissue that is stored in the skin and in the abdominal cavity, and which, if left inactive and with poor blood circulation, could never be recalled as fuel, although its primary function is that of stored food.

With the above view of the physiologic grounds for advocating massage, the question will naturally arise as to what may be the value of the art in acute diseases. Already it has won a place for itself in the treatment of chronic cases where appropriate stimulation is needed if repair is to be encouraged and facilitated. There is a certain line of cases, like the zymotic diseases, where the benefits of massage may seem more or less problematical, and as this is a field which has not been occupied by any except the more expert and careful masseurs, we must appeal to our physiology in support of this means as a rational help in the treatment of these cases, especially at certain stages of the disease. In such a condition as pneumonia or typhoid fever, where the heart action becomes a matter of solicitude, there would be absolutely no contraindication to the use of massage, if properly applied, to diminish the burden carried by the heart and thus improve the patient's condition and ability to endure the other hardships of the disease.

In typhoid fever the failure in heat elimination can be partially remedied by appropriate manipulation, but I believe that the most favorable results will be produced on the circulation and nutrition. As it is a disease that locally affects the nutrient canal and ren-

ders it unfit for its work of digestion and absorption by reason of the high temperature and inflammation of the mucous membrane and intestinal glands, it is desirable, therefore, not to require more work of this particular organ than is absolutely necessary. So we may resort to the utilization of stored food that can be brought into the circulation from storage cells as well as from the muscles themselves. This will maintain the vitality of the patient through prolonged periods without the possibility of fermentation and decomposition changes going on inside of the intestine where their products will prove specially irritating to surfaces that are already tending to break down or that have broken down and present ulcers of rodent type. We know through experience with wounds on the external surface of the body how quickly their character changes when decomposition products are brought in contact with them, and we must believe that the same changes occur in parts that are not readily open to inspection. We have proved that these products produce increased inflammation, as shown by the elevation of temperature, tympanites and the poisoning of the central nervous system that formerly so frequently resulted in active delirium, but more recently rarely reaches this condition of toxemia.

EFFECT OF EXERCISE ON THE BLOOD.

An examination into the modifications of the blood that are caused by exercise has been made by Drs. Mitchell and Babbitt of Philadelphia, and Dr. McCurdy of Springfield. Their investigations seem to show that the corpuscular element of the blood is increased by both active and passive exercise, and while this is probably due to what may be considered a more even distribution of the corpuscles throughout the vascular system, it would appear that in any form of acute diseases such an even distribution is greatly to be desired from a physiologic standpoint. In the zymotic diseases the increase of leucocytes is highly desirable, and any process that does not produce injurious effects in other respects and that will cause an increased leucocytosis, would naturally be employed.

MASSAGE IN PARALYSIS.

My principal plea for the employment of massage is for the effect which it has on the nerve centers and as

an assistant to the heart by relieving it of a considerable part of its work. Where disease is long continued another condition should not be overlooked, namely, where muscular tissue is likely to undergo atrophy and cause deformity and subsequent inefficiency of the part. Such cases are constantly recurring in the practice of every physician.

I remember vividly the first case of Bell's paralysis of the facial nerve that ever came under my professional care. The patient was a young man who was studying for the ministry, and the facial condition was such as to cause great alarm and doubt as to the possible ability of the patient to carry out his plans for his life work. The paralysis was more than ordinarily severe, and yet by proper massage the tissues were not wasted nor seriously atrophied, and this man now holds a very important charge as pastor of a church in New England.

Another case that I saw afterward had not been treated for five months, and while the patient was a young man with everything favorable to repair he was unable to close his eyes or move the superficial muscles of the face, while the inability to eat with comfort and properly masticate food had led to a general condition of asthenia that was pitiable. This patient was put under massage treatment, but the tissues never recovered their normal action and form.

We have all seen many cases of muscular atrophy resulting from scarlatina, diphtheria and similar diseases. I am confident that with proper care such cases need not be left as a burden to themselves and society, but with proper intervention to prevent wasting and to improve the nutrition and innervation the great majority of cases would make a good recovery.

MASSAGE IN ACUTE INFLAMMATIONS.

In acute inflammations along the spinal tract much may be done to relieve the severity of the congestion by massage, and the assistance that may be given to Nature in establishing neuromuscular activity after a more or less severe disintegration of nerve tracts and centers is undoubtedly very great. In such acute diseases as rheumatism, the pain and congestion are greatly relieved by appropriate massage, and undoubtedly the elimination of waste matters can be greatly

facilitated, for it has been demonstrated that not only will the circulation through a given part be greatly assisted, but the functional activity of the glands may be decidedly increased, as has been done in the massage of the kidneys. The sweat glands may be powerfully stimulated, and it is not uncommon to find the skin start a profuse perspiration after a few minutes of appropriate manipulation.

An important value of massage in the care of acute diseases lies in the great relief that the patient experiences from the discomfort that is due to the confinement of the disease. This is especially true of young and middle-aged people who are accustomed to a more or less active life. When disease suddenly stops muscular activity there is a tendency to nervous restlessness and actual pain due to the poor circulation through the muscles and their inability to perform their normal functions. The distaste for confinement in such cases often impels them to keep about when the physician advises a recumbent position and quiescence. By appropriate deep massage all this muscular discomfort is relieved, the circulation through the parts is established, and every condition for repair is improved, until it would almost seem that no element in the nursing of such a patient could be of greater importance than such manipulation.

At present the indication is met in the large majority of cases by superficial skin friction and the application of alcohol; and while this relieves the edema of the skin and subcutaneous areolar tissue, it only superficially accomplishes what is desired, and is to that extent inefficient.

MASSAGE IN HYPEREMIA OF MEMBRANES.

The same thing can be accomplished in diseases that is accomplished in traumatic injuries, although the ocular evidence may not be so well marked. It has always been my practice in treating fractures, dislocations, etc., to relieve edema by appropriate stimulation of the lymph vessels by massage, and I have never yet seen a case that was not greatly relieved from pain, and where the developing turgescence was not checked by this measure. It is fair and rational to assume that the inflammation excited by pain in any part of the body can be checked to a considerable extent by sim-

ilar processes. If the appropriate massage of the knee joint can effectually promote the absorption of exudate, may it not equally be expected that appropriate manipulation will promote the absorption of an intrapleural effusion? Or, if the effusion is due to a prolonged hyperemia of the pleural membrane, is it not barely possible that appropriate attention given to the circulation of the blood and lymph in the thoracic wall may prevent effusion?

If any person doubts the derivative influence of massage on membranes that are untouched by the process, I ask any such person to experiment on himself the next time he has a severe coryza by vigorous massage of the skin around the base and over the bridge of the nose. The balance between what may be considered normal circulation in a part and hyperemia is so delicate that very slight nerve stimulation, if properly applied, may turn the system in one direction or the other.

MASSAGE IN NEURALGIAS.

In neuralgias the relief by appropriate manipulation is often very marked, and apparently the nutrition of the affected nerve trunk is so influenced that the normal balance is soon secured, and it is found that the pressure along the nerve trunks, to a certain extent, corresponds to a stretching that was long ago found to be an efficient method of treating persistent neuralgias. In sciatica the new method of nerve stretching has been found to be quite as efficient as the surgical method that has been to some extent in vogue. I may say in passing that this new method of stretching consists in flexing the thigh on the trunk as far as convenient, then extending the leg on the thigh so far as can be borne by the patient, and at the same time flexing the foot on the leg as a final part of the movement. This makes the course of the sciatic nerve as long as it can be made in any movement of the body, and where the nerve is extremely sensitive must be done under an anesthetic if carried to its complete extent, which is not always necessary or desirable. I think I am correct in saying that this method is essentially the only one used in the treatment of sciaticas among Scandinavian peoples, and is followed to a considerable extent in France and Germany.

Of course, the diseases mentioned are only illustra-

tions of the general application of this great therapeutic means which has been so long neglected by our profession in this country.

TRAINING NECESSARY FOR THE APPLICATION OF MASSAGE.

It goes without saying that in acute diseases the manipulation should be applied by a person who understands the systemic needs that are to be met. This brings us to a consideration of the training necessary for the application of this method of treatment.

There is a too general feeling among the medical practitioners of the country that massage is allied with the so-called "magnetic" treatment that is practiced by some of the most arrant humbugs to be found in the country; people who profess to be able to "fill the patient with vitality" from their own superabundant stock, and who feign to be greatly exhausted after half an hour's simple manipulation that would require comparatively little expenditure of energy; or they look on the work as being simply skin friction that has no other function than the soothing of nervous excitement, the control of the attention and the setting up of certain nerve reflexes that are allied to the normal nerve activities excited by contacts in normal exercises. Nothing is to be more regretted than this superficial view of the matter. It leads to every trained nurse being expected to be competent to massage a patient, and every athletic trainer and "rubber" being considered a suitable person to act as masseur in cases that are deemed suitable for this therapeutic method. I have noted illustrations of this, to which I wish to call your attention, as they are not unique but customary.

A surgeon of some prominence, in a city of over 100,000 inhabitants, had been advised to try massage in a case of rheumatism, and he sent for a young man of Hibernian extraction, who had carried water and various athletic paraphernalia for college teams, and had finally become a "rubber" for the football team, to take charge of this case, which he did, with results that were satisfactory to the patient and the physician, except that the next time the patient had an attack of rheumatism that happened to be of fairly acute form, he called in the rubber—I can not call him a masseur—and was treated for several weeks before it

was deemed necessary to call in a physician to outline other therapeutic means that were of more immediate consequence than the superficial skin friction, accompanied by more or less oily liniment that had been used.

A second case illustrates the need of training for masseurs. A person suffering from constipation and muscular atony was advised to have massage, and a trained nurse was called in to attend to this phase of the treatment, as she was reputed to have considerable skill and a "magnetic" touch. She manipulated the case in a superficial way with considerable nervous satisfaction to the patient, who insisted that she was improving under the treatment; but her constipation received no benefit whatever, and the manipulation was not sufficiently deep to promote the circulation in the muscular tissues, and she finally became so weak and anemic that she gave up the treatment in despair, and was ordered South for a change of climate. There she fortunately fell into the hands of a physician at a sanitarium, where massage was prescribed, with passive exercise and resistive movements, by a physician who knew what ought to be done and had an attendant who was capable of doing it. The gain was immediate, and the lady returned to her home after two months in greatly improved condition, and her health has remained satisfactory.

I am frequently in communication with sanitariums and hospitals that are inquiring for masseurs to take up the work in their institutions, and I never yet have found but one such place where a masseur was treated as anything better than an ordinary ward master, and they are usually paid about the same wages.

In Sweden, which is the home of medical gymnastics, the government supports a school where three departments of physical training are taught. A course of military gymnastics for the training of the officers for their army and navy; a course in educational gymnastics to train teachers for public-school work; and a course in medical gymnastics for the training of experts in kinesitherapy. In addition to the educational and physical requirements for entrance to the school, there is a course of two years during which the pupil is trained in anatomy, including dissection, physiology, kinesiology, pathology, and practical work in both active

and passive exercises in all forms that have been found advantageous from a therapeutic standpoint. During two years these pupils have the advantage of daily work in a clinic, where the new men are taught under the supervision of the senior class and the director, who is a trained physician. In the city of Stockholm there are at least five great clinics where patients are treated by this method, either at public or private expense. The work done in these clinics is co-ordinate with the work of the medical clinic. Cases that happen to go to a medical college are referred to the gymnastic clinic if this therapeutic method seems indicated; and, on the other hand, if a case reported to the gymnastic clinic that was obviously a case for medical treatment, it would be referred to the appropriate place. I happened to be in the Royal Central Gymnastic Institute when a sailor appeared for treatment, who evidently had what is so common in this country, but so rare in Sweden that it was not recognized, namely, a case of tertian malaria, with the characteristic chills and rise of temperature. This case was immediately referred to the medical clinic on my diagnosis; and, on the other hand, cases were daily appearing with cards from the medical clinic to the gymnastic clinic. From observation of work in this line in Stockholm I estimated that from 400 to 500 cases a day were thus treated in more or less public institutions.

Where the medical profession has been trained to an appreciation of scientific exercise, and where the masseur has a training in the proper application of exercise, the two work hand in hand with a most gratifying success. For the physician may direct a certain form of exercise that is indicated for the patient, and be sure that in dosage the masseur will be competent to execute his orders with exactness and a trained appreciation of what is to be done. The assistance given to the practitioner is akin to the assistance a trained surgical nurse gives in preparing for an operation and in the subsequent dressing of the wound—an assistance that makes modern surgery as efficient as it is.

May I suggest that in this country our needs lie in two directions?

First, instruction in the medical schools, that is now almost entirely omitted, that should put the students in possession of the theoretical basis of active

and passive exercises, from a physiologic and from a therapeutic standpoint. Also, such practical instruction as would make the physician a competent judge of the quality of the work that should be expected of a masseur. A department for this form of instruction is certainly not unreasonable, for in the better class of medical schools courses in pharmacy are given in order to acquaint the student more thoroughly with the appearance and physical qualities of drugs in the various combinations in which they are ordinarily prescribed.

The second need is in the line of more thorough training of people who wish to practice kinesitherapy. May I suggest that the work done in training for this line of activity should cover at least two, and better three years, the theoretical instruction being parallel with the instruction of the first two years in the best medical schools, except that the emphasis should be laid on physiology and anatomy, with the time now devoted to chemistry turned toward theoretical and practical demonstrations and practice of the technic of medical gymnastics. I believe they should have some training in materia medica in order that they may understand the physiologic effects of the commonly used drugs; they should also be made familiar with hydrotherapy and other forms of mechanical treatment. The person who completes such a course should be given a degree or professional title, like "Medical Gymnast," and be legally registered for practice, in order that the people at large may know that the practitioner has received a stated form of training for his work and passed definite examinations to establish his ability to practice. This would give the medical practitioner a trained assistant, whose ability might not always be of the highest grade, because even the title of "M.D." conferred by our largest institutions does not always guarantee a competent practitioner; yet on the whole it will raise the standard of work and give an assurance to the people that the person employed is qualified for the work for which he is paid; and the incompetent will be weeded out by the laws of the survival of the fittest as they enter into competition with each other. With the status of the masseur thus determined, the fakirs who now parade under other names but "wear the livery of Heaven to serve the devil in" would be forced into some other line of activity.

In many of our larger cities it is possible to find men and women of rare ability who have been thoroughly trained for the work that they do and whose relations to the medical practitioner are most loyal and satisfactory. I happen to know of such people whose character and attainments are of the very highest order, and whose professional earnestness and honor may well be a model for any of us.

I am not arguing for massage as a panacea, or as the only therapeutic means of value. I simply claim for it such a rational basis for its practice as is furnished by the most thorough knowledge of physiology, and a knowledge of the psychoneural control of many of the pathologic and physiologic processes of our bodies. By this neglect we have put in the hands of illegitimate practitioners an instrument that they have wielded to the advantage of many patients and to the much greater advantage of their own pocket books.

The chemical elements and their combinations are not the only means of awakening or subduing physiologic action. In fact their influence has undoubtedly been overestimated by the practitioners of the past; and while we may take well-deserved credit to ourselves for the beneficent results obtained through drug medication during the hundreds of years in which it has occupied the chief attention of the profession, we must also bear the onus of the extensive drug addiction that is to-day one of the great curses of the human family.